

Attorney Docket No.: 13257.00044 (UMD-0084)
Inventors: Sciorra and Zimnoch
Serial No.: 09/869,741
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REMARKS

The Examiner states claims 1-92 are pending when, in fact, claims 1-93 are pending in the instant application. Claims 40-93 have been withdrawn from consideration. Claims 1-39 have been rejected. Claims 25 and 40-93 have been canceled. Claims 1, 26, and 29 have been amended. No new matter has been added by this amendment. Reconsideration is respectfully requested in light of the following remarks.

I. Election/Restriction Requirement Under 35 U.S.C. §121

The restriction requirement placing the claims into Groups I and II has been deemed proper and made final. Claims 40-92 are withdrawn from further consideration. Accordingly, Applicants are canceling claims 40-92 without prejudice, reserving the right to file continuing applications for the canceled subject matter.

II. Claim Objections

Claim 1 has been objected to for reciting "anon", which is suggested to be a mistype. Applicants have amended claim 1 to correct this inadvertent typographical error and respectfully request that this objection be withdrawn.

III. Rejections Under 35 U.S.C. §112

Claim 29 has been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically claim 29 has been suggested as being indefinite for reciting a "coating step" which lacks

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antecedent support. To facilitate the prosecution of the present application, Applicants have amended claim 29 to clarify that the step of "placing the suspension onto a substrate material comprises placing the magnetic mixture along one edge of the substrate material." In light of this amendment it is respectfully requested that this rejection be withdrawn.

IV. Rejections Under 35 U.S.C. §102 and §103

Claims 1-9, 12, 14, 16-20, 22-24, 29, and 37-39 have been rejected under 35 U.S.C. 102(b) as being anticipated by Farber (U.S. Patent No. 5,602,042). It is suggested that Farber teaches a method and apparatus for magnetically separating biological particles from a mixture. The Examiner suggests that Farber teaches providing superparamagnetic beads coated with a ligand with specific affinity to target molecules; combining the sample suspected of containing the target molecules with such beads to form a mixture; exposing the mixture to a plate with a collection surface so that the beads flow through the fluid toward the magnetic field source so that the target molecules are collected against the plate surface. The Examiner further suggests that Farber teaches the sample and target molecules of the instant invention as well as the pre-determined increase in the magnetic field in a pulsing manner. It is further suggested that Farber teaches deactivating the magnetic field to remove the magnetic particle.

Claims 32-36 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Farber (U.S. Patent No. 5,602,042). The Examiner suggests that while Farber does not teach the frequency at which the magnetic field is activated or deactivated is from

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about 0.5 to 10 seconds per pulse or 2.0 seconds per pulse; and a magnetic field strength of about 1.5 to 2.0 or at least 3.0 Tesla, it would have been obvious to one of skill in the art to arrive at these specific pulse ranges and magnetic field strengths since discovering the optimum or workable ranges involves only routine skill in the art.

Claims 10, 11, 13, 15, 21, and 30 have also been rejected under 35 U.S.C. 103(a) as being unpatentable over Farber (U.S. Patent No. 5,602,042) in view of Terstappen et al. (U.S. Patent No. 5,646,001). It is suggested that while Farber does not teach the elements of claims 10, 11, 13, 15, 21, and 30, Terstappen et al. disclose these elements.

Claims 25-28 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Farber (U.S. Patent No. 5,602,042) in view of Mroczkowski et al. (U.S. Patent No. 5,137,827). The Examiner acknowledges that Farber fails to teach that the substrate material is methylcellulose; that the substrate material comprises a viscous solution that prevents diffusion of the magnetic component unless a magnetic force is applied; and the solution is between 1.7% and 2% methylcellulose. It is suggested that Mroczkowski teaches that methylcellulose is a bioactive plastic and one of skill in the art would have been motivated to make a plate/substrate using plastic such as methylcellulose as taught by Mroczkowski for use in the method of Farber since Farber teaches that his plate is made of conventional plastic. The Examiner suggests that methylcellulose is known as a growth culture medium and a viscous solution and therefore it would have been obvious to one of ordinary skill to recognize the properties of methylcellulose since the substrate

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material is the same as that of the present invention and when separation involves populations of cells, culture media is needed for maintaining the physiological environment and viability of the cells. It is further suggested that discovering the optimum or workable ranges of methylcellulose involves only routine skill in the art and therefore would have been obvious to one of ordinary skill. Claim 31 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Farber (U.S. Patent No. 5,602,042) in view of Tseng-Law et al. (U.S. Patent No. 6,017,719). It is suggested that while Farber fails to teach labeling non-target substances with a fluorescent marker, Tseng-Law et al. teaches positive and negative methods of cell selection from a cell suspension, wherein the positive cells are labeled with a fluorescent marker.

Applicants respectfully disagree with the Examiner's interpretation of the teachings of the cited references. Farber discloses the controlled magnetic extraction of particles dispersed within a fluid medium (see column 6, lines 34-36). Farber teaches a plate **16** positioned between a magnet **12** and the fluid sample **26**, wherein the particles are collected over the surface **42** of the plate **16** when a magnetic field is applied (column 6, line 61, to column 7, line 47). While Farber teaches that the plate **16** can be formed from a non-porous material, such as aluminum, polystyrene, polyethylene or conventional plastic, this reference does not teach or suggest a substrate material composed of a viscous solution that substantially prevents diffusion of the magnetic component unless a magnetic force is applied. As would be readily recognized by one of skill in the art, the non-porous conventional plastic plate described by

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Farber is inherently a solid material without pores. Thus, the plate of Farber is not a viscous solution.

Similarly, Mroczkowski discloses a base **22** which can be made of a bioreactive plastic such as polypropylene, Mylar, phenolic plastic, vinyl, methyl cellulose, nylon or polystyrene (column 9, lines 50-53). Given that Mroczkowski teaches that base **22** can be rectangular in shape (column 10, lines 55-56) and have a terminal plate **63** mounted to the edge thereof (column 10, lines 52-53), the methyl cellulose of Mroczkowski could not be reasonable considered a viscous solution that substantially prevents diffusion of the magnetic component unless a magnetic force is applied.

In contrast, Applicants have appreciated that, depending on the size and shape of the components to be magnetically separated, the viscosity of the substrate material can be adjusted to allow for differential migration of the components in a solution under the effect of a magnetic field. Moreover, by adjusting the viscosity of the substrate material, the component to be separated is substantially unable to diffuse through the material unless the requisite magnetic field is applied. See page 23, lines 17-28. Applicants have amended claim 1 to recite that the substrate material comprises a viscous solution that substantially prevents diffusion of the magnetic component unless a magnetic force is applied. Support for this amendment is found in claim 25 as originally filed. Therefore claim 25 has been canceled. Because Farber, whether alone or combined with the teachings of Mroczkowski, fails to teach or suggest the viscous solution of claim 1, Farber cannot be held to anticipate nor make obvious the method of claim 1. In so far as claims 2-24 and 26-39

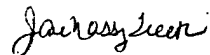
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are dependent upon the subject matter of claim 1 and all claims have been rejected in view of Farber, claims 2-24 and 26-39 cannot be held obvious over Farber in view of Terstappen, Mroczkowski or Tseng-Law et al. It is therefore respectfully requested that these rejections be withdrawn.

V. Conclusion

The Applicants believe that the foregoing comprises a full and complete response to the Office Action of record. Accordingly, favorable reconsideration and subsequent allowance of the pending claims is earnestly solicited.

Respectfully submitted,



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Date: January 5, 2006

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